



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Perfluorocarbon (PFC) Analysis

Lot #: D9H220152

Dena Haverland

Dalton Utilities
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A handwritten signature in black ink, appearing to read "Michelle A. Johnston".

Michelle A. Johnston
Project Manager

September 21, 2009

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<i>Standard Deliverables</i> <p><i>The Cover Letter and the Report Cover page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.</i></p> <ul style="list-style-type: none">• Table of Contents• Case Narrative• Executive Summary – Detection Highlights• Methods Summary• Method/Analyst Summary• Lot Sample Summary• Analytical Results• Summary Report• Chain of Custody	<div style="border: 1px solid black; padding: 5px; width: fit-content;">65</div>

Case Narrative

D9H220152

TestAmerica Denver utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the methods summary page in accordance with the methods indicated. Dilution factors and footnotes are provided on each datasheet to assist in the interpretation of the results.

The results relate only to the samples in this report and meet all requirements of NELAC. All data have been reviewed for compliance with the laboratory QA/QC plan and have found to be compliant with laboratory protocols with any exceptions noted below.

Please note that Non-Detect (ND) results have been evaluated down to the Method Detection Limit (MDL) and should be considered ND at the MDL. Unless otherwise noted, results for solids have been dry weight corrected.

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Sample Arrival and Receipt

The following report contains the analytical results for eight samples received at TestAmerica Denver on August 22, 2009, according to documented sample acceptance procedures. The samples were received in good condition at a temperature of 2.8°C. No anomalies were encountered during sample receipt.

Standards

Analytical standards were prepared using commercially available certified solutions containing all compounds of interest.

The mass labeled compounds 13C4 PFBA, 13C2 PFHxA, 18O2 PFHxS, 13C4 PFOA, 13C4 PFOS, 13C5 PFNA, 13C2 PFDA, 13C2 PFUnA, 13C2 PFDoA, and D3 MeFOSA were introduced at the extraction step and were used for internal standards for the quantitation of the target compounds.

Sample Extraction and Analysis

The samples presented in this report were extracted for the target analytes by TestAmerica Denver's Standard Operating Procedure (SOP) DV-OP-0019 and analyzed for the target analytes by TestAmerica Denver's SOP DV-LC-0012.

Method QC Samples

The Method Blank is processed reagent water spiked with surrogate and prepared with each batch of 20 samples of the same matrix. The method blanks were non-detect at the reporting limits for the target analytes.

Each batch is prepared with low and mid level Laboratory Control Samples (LCS). The LCS recoveries for both levels were within established control limits, with the exception of the items noted in section Analytical Comments.

Analytical Comments

Please note during the FOSA extraction process all eight samples clogged the cartridge; therefore, the organic preparation chemist had to use two cartridges for each of these samples.

The Standard Operating Procedure (SOP) was altered slightly in the sample preparation for FOSA. Sodium hydroxide was added to all eight samples to obtain a pH of 14 instead of the SOP required <2. The basic pH is generating better internal standard recoveries for MeFOSA.

The Standard Operating Procedure (SOP) was altered slightly in the sample preparation for FOSA for batch 9259162. Strata-XL cartridges were used instead of the SOP required Strata-X. This was done to help minimize the clogging problems in these samples. The Strata-XL has a larger pore size allowing more viscous sample matrix to be extracted.

Due to low internal standard recoveries in the samples, samples #28 189 River View Dr, #29 38 River View Dr, #30 428 Holly Dr, #31 196 River View Dr, #32 382 Holly Dr, #33 273 West Holly Creek Dr, and DUP were re-extracted out of the laboratory prescribed hold time and reanalyzed in QC batch 9259162. All four batches are included in this report. Please note the sample results should be considered estimated.

The internal standard recoveries for 13C2 PFUnA and 13C2 PFDoA associated with QC batch 9238300 were recovered below 50% in samples #27 93 River View Dr, # 32 382 Holly Dr. Sample # 32 382 Holly Dr also exhibited low internal standard recoveries for 13C4 PFOS, 13C2 PFHxA, 13C5 PFNA, and 13C2 PFDA. Upon re-extraction and reanalysis in QC batch 9240442, internal standard recoveries were 100% in control. Both sets of data have been provided.

The internal standard recoveries for MeFOSA associated with QC batch 9239343 were recovered below 50% in samples #28 189 River View Dr, #29 38 River View Dr, #30 428 Holly Dr, #31 196 River View Dr, #32 382 Holly Dr, #33 273 West Holly Creek Dr, and DUP. Upon re-extraction past hold time and reanalysis in QC batch 9259162, internal standard recoveries were 100% in control. Both the original and reanalysis data have been provided, as re-extraction was unavoidably performed outside the laboratory recommended sample holding time.

The low-level LCS analyses associated with QC batches 9239343 and 9259162 exhibited percent recoveries above the QC control limits for Perfluorooctane sulfonamide (FOSA). This is an indicator that data may be biased high. As no detectable FOSA concentrations are present in the associated samples, corrective action is deemed unnecessary.

The method required MS/MSD could not be performed for QC batches 9239343 and 9259162, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable low-level LCS and mid-level LCS/LCSD analyses data.

No other anomalies were observed.

EXECUTIVE SUMMARY - Detection Highlights

D9H220152

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
#29 38 RIVER VIEW DR 08/21/09 10:46 003				
Perfluorohexanoic acid (PFHxA)	0.0048 J	0.020	ug/L	DEN -LC-0012
#32 382 HOLLY DR 08/21/09 11:22 006				
Perfluorohexanoic acid (PFHxA)	0.0031 J	0.020	ug/L	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	0.0046 J	0.020	ug/L	DEN -LC-0012
#33 273 WEST HOLLY CREEK DR 08/21/09 11:48 007				
Perfluoropentanoic acid (PFPA)	0.012 J	0.030	ug/L	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	0.0063 J	0.020	ug/L	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	0.012 J	0.020	ug/L	DEN -LC-0012
Perfluorooctanoic Acid	0.0067 J	0.020	ug/L	DEN -LC-0012

METHODS SUMMARY

D9H220152

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
LC/MS/MS PFCs	DEN -LC-0012	SW846 FOSA spec

References:

DEN Severn Trent Laboratores, Denver, Facility Standard
Operating Procedure.

METHOD / ANALYST SUMMARY

D9H220152

<u>ANALYTICAL METHOD</u>	<u>ANALYST</u>	<u>ANALYST ID</u>
DEN -LC-0012	Jacqueline Bonnett	003601

References:

DEN Severn Trent Laboratores, Denver, Facility Standard
Operating Procedure.

SAMPLE SUMMARY

D9H220152

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
LJL24	001	#27 93 RIVER VIEW DR	08/21/09	10:19
LJL3C	002	#28 189 RIVER VIEW DR	08/21/09	10:30
LJL3D	003	#29 38 RIVER VIEW DR	08/21/09	10:46
LJL3F	004	#30 428 HOLLY DR	08/21/09	11:05
LJL3G	005	#31 196 RIVER VIEW DR	08/21/09	11:14
LJL3H	006	#32 382 HOLLY DR	08/21/09	11:22
LJL3J	007	#33 273 WEST HOLLY CREEK DR	08/21/09	11:48
LJL3L	008	DUP	08/21/09	

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Dalton Utilities

Client Sample ID: #27 93 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-001 Work Order #....: L JL241AA Matrix.....: WATER
 Date Sampled....: 08/21/09 10:19 Date Received...: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 11:47
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluoroctanesulfonate	ND	0.020	ug/L	0.0068
Perfluoroctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	88	(50	- 200)
13C4 PFOS	52	(50	- 200)
13C4 PFBA	71	(50	- 200)
<u>13C2 PFHxA</u>	<u>70</u>	<u>(50</u>	<u>- 200)</u>
18O2 PFHxS	75	(50	- 200)
13C5 PFNA	59	(50	- 200)
13C2 PFDA	50	(50	- 200)
13C2 PFUnA	47 *	(50	- 200)
13C2 PFDoA	45 *	(50	- 200)

NOTE (S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #27 93 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-001 Work Order #....: L JL241AC Matrix.....: WATER
Date Sampled....: 08/21/09 10:19 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:14
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS		
MeFOSA	50	(50 - 200)		

Dalton Utilities

Client Sample ID: #27 93 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-001 Work Order #....: L JL242AA Matrix.....: WATER
 Date Sampled....: 08/21/09 10:19 Date Received...: 08/22/09
 Prep Date.....: 08/28/09 Analysis Date...: 08/30/09
 Prep Batch #....: 9240442 Analysis Time...: 05:13
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xs)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	125	(50	- 200)
13C4 PFOS	88	(50	- 200)
13C4 PFBA	97	(50	- 200)
13C2 PFHxA	113	(50	- 200)
18O2 PFHxS	106	(50	- 200)
13C5 PFNA	99	(50	- 200)
13C2 PFDA	90	(50	- 200)
13C2 PFUnA	87	(50	- 200)
13C2 PFDoA	87	(50	- 200)

Dalton Utilities

Client Sample ID: #28 189 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-002 Work Order #....: LJL3C1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 10:30 Date Received...: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 12:03
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT ria)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS	
		(50 - 200)	(50 - 200)
13C4 PFOA	87	(50 - 200)	(50 - 200)
13C4 PFOS	61	(50 - 200)	(50 - 200)
13C4 PFBA	69	(50 - 200)	(50 - 200)
13C2 PFHxA	66	(50 - 200)	(50 - 200)
18O2 PFHxS	74	(50 - 200)	(50 - 200)
13C5 PFNA	64	(50 - 200)	(50 - 200)
13C2 PFDA	64	(50 - 200)	(50 - 200)
13C2 PFUnA	63	(50 - 200)	(50 - 200)
13C2 PFDoA	57	(50 - 200)	(50 - 200)

Dalton Utilities

Client Sample ID: #28 189 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-002 Work Order #....: L JL3C1AC Matrix.....: WATER
Date Sampled....: 08/21/09 10:30 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:21
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT	RECOVERY	LIMITS	
MeFOSA	37 *	(50 - 200)		

NOTE(S) :

- * Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #28 189 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-002 Work Order #....: L JL3C2AC Matrix.....: WATER
Date Sampled....: 08/21/09 10:30 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time..: 22:37
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	59		

Dalton Utilities

Client Sample ID: #29 38 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-003 Work Order #....: L JL3D1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 10:46 Date Received..: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 12:19
 Dilution Factor: 1

Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	0.0048 J	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C4 PFOA	91	(50 - 200)
13C4 PFOS	64	(50 - 200)
13C4 PFBA	66	(50 - 200)
13C2 PFHxA	66	(50 - 200)
18O2 PFHxS	75	(50 - 200)
13C5 PFNA	63	(50 - 200)
13C2 PFDA	66	(50 - 200)
13C2 PFUnA	69	(50 - 200)
13C2 PFDoA	62	(50 - 200)

NOTE (S) :

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #29 38 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-003 Work Order #....: L JL3D1AC Matrix.....: WATER
Date Sampled....: 08/21/09 10:46 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:28
Dilution Factor: 1 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	LIMITS	
			(50 - 200)	
MeFOSA	31 *		(50 - 200)	

NOTE(S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #29 38 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-003 Work Order #....: L JL3D2AC Matrix.....: WATER
Date Sampled....: 08/21/09 10:46 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 22:44
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT	RECOVERY		
MeFOSA	RECOVERY	LIMITS		
	56	(50 - 200)		

Dalton Utilities

Client Sample ID: #30 428 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-004 Work Order #....: L JL3F1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 11:05 Date Received...: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 12:35
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xs)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	97	(50	- 200)
13C4 PFOS	71	(50	- 200)
13C4 PFBA	76	(50	- 200)
13C2 PFHxA	75	(50	- 200)
18O2 PFHxS	85	(50	- 200)
13C5 PFNA	73	(50	- 200)
13C2 PFDA	71	(50	- 200)
13C2 PFUnA	72	(50	- 200)
13C2 PFDoA	62	(50	- 200)

Dalton Utilities

Client Sample ID: #30 428 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-004 Work Order #....: LJL3F1AC Matrix.....: WATER
Date Sampled...: 08/21/09 11:05 Date Received..: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:35
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	39 *		

NOTE (S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #30 428 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-004 Work Order #....: L JL3F2AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:05 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 22:51
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT	RECOVERY	LIMITS	
MeFOSA	59	(50 - 200)		

Dalton Utilities

Client Sample ID: #31 196 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-005 Work Order #....: LJL3G1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 11:14 Date Received..: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 12:51
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (PFTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY
		LIMITS
13C4 PFOA	102	(50 - 200)
13C4 PFOS	75	(50 - 200)
13C4 PFBA	77	(50 - 200)
13C2 PFHxA	74	(50 - 200)
18O2 PFHxS	87	(50 - 200)
13C5 PFNA	74	(50 - 200)
13C2 PFDA	73	(50 - 200)
13C2 PFUnA	77	(50 - 200)
13C2 PFDoA	65	(50 - 200)

Dalton Utilities

Client Sample ID: #31 196 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-005 Work Order #....: L JL3G1AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:14 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:43
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT	RECOVERY		
	RECOVERY	LIMITS		
MeFOSA	38 *	(50 - 200)		

NOTE(S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #31 196 RIVER VIEW DR

HPLC

Lot-Sample #....: D9H220152-005 Work Order #....: L JL3G2AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:14 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 22:59
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	69		

Dalton Utilities

Client Sample ID: #32 382 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-006 Work Order #....: L JL3H1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 11:22 Date Received...: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 13:07
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xs)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	0.0046 J	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT ria)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	60	(50	- 200)
13C4 PFOS	40 *	(50	- 200)
13C4 PFBA	50	(50	- 200)
13C2 PFHxA	48 *	(50	- 200)
18O2 PFHxS	55	(50	- 200)
13C5 PFNA	41 *	(50	- 200)
13C2 PFDA	41 *	(50	- 200)
13C2 PFUnA	41 *	(50	- 200)
13C2 PFDoA	34 *	(50	- 200)

NOTE(S) :

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #32 382 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-006 Work Order #....: L JL3H1AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:22 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 16:50
Dilution Factor: 1 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	41 *		

NOTE(S) :

- * Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #32 382 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-006 Work Order #....: L JL3H2AA Matrix.....: WATER
 Date Sampled....: 08/21/09 11:22 Date Received...: 08/22/09
 Prep Date.....: 08/28/09 Analysis Date...: 08/30/09
 Prep Batch #....: 9240442 Analysis Time...: 05:29
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xs)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	0.0031 J	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT ria)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY
		LIMITS
13C4 PFOA	93	(50 - 200)
13C4 PFOS	53	(50 - 200)
13C4 PFBA	79	(50 - 200)
13C2 PFHxA	91	(50 - 200)
18O2 PFHxS	83	(50 - 200)
13C5 PFNA	67	(50 - 200)
13C2 PFDA	52	(50 - 200)
13C2 PFUnA	54	(50 - 200)
13C2 PFDoA	52	(50 - 200)

NOTE(S) :

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #32 382 HOLLY DR

HPLC

Lot-Sample #....: D9H220152-006 Work Order #....: L JL3H2AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:22 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 23:06
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	67		

Dalton Utilities

Client Sample ID: #33 273 WEST HOLLY CREEK DR

HPLC

Lot-Sample #....: D9H220152-007 Work Order #....: LJJL3J1AA Matrix.....: WATER
 Date Sampled....: 08/21/09 11:48 Date Received...: 08/22/09
 Prep Date.....: 08/26/09 Analysis Date...: 08/27/09
 Prep Batch #....: 9238300 Analysis Time...: 13:23
 Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	0.012 J	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	0.0063 J	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	0.012 J	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riaA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	0.0067 J	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	90	(50	- 200)
13C4 PFOS	67	(50	- 200)
13C4 PFBA	73	(50	- 200)
13C2 PFHxA	74	(50	- 200)
18O2 PFHxS	83	(50	- 200)
13C5 PFNA	64	(50	- 200)
13C2 PFDA	67	(50	- 200)
13C2 PFUnA	67	(50	- 200)
13C2 PFDoA	53	(50	- 200)

NOTE(S) :

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #33 273 WEST HOLLY CREEK DR

HPLC

Lot-Sample #....: D9H220152-007 Work Order #....: L JL3J1AC Matrix.....: WATER
Date Sampled...: 08/21/09 11:48 Date Received..: 08/22/09
Prep Date.....: 08/27/09 Analysis Date..: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 17:04
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	47 *		

NOTE(S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: #33 273 WEST HOLLY CREEK DR

HPLC

Lot-Sample #....: D9H220152-007 Work Order #....: LJL3J2AC Matrix.....: WATER
Date Sampled....: 08/21/09 11:48 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 23:13
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS		
MeFOSA	56	(50 - 200)		

Dalton Utilities

Client Sample ID: DUP

HPLC

Lot-Sample #....:	D9H220152-008	Work Order #....:	LJL3L1AA	Matrix.....:	WATER
Date Sampled....:	08/21/09	Date Received...:	08/22/09		
Prep Date.....:	08/26/09	Analysis Date...:	08/27/09		
Prep Batch #....:	9238300	Analysis Time...:	13:39		
Dilution Factor:	1				

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluoropentanoic acid (PFPA)	ND	0.030	ug/L	0.0082
Perfluorohexane sulfonate (PFH xS)	ND	0.030	ug/L	0.0084
Perfluorobutanoic acid (PFBA)	ND	0.020	ug/L	0.0062
Perfluorohexanoic acid (PFHxA)	ND	0.020	ug/L	0.0030
Perfluoroheptanoic acid (PFHpA)	ND	0.020	ug/L	0.0054
Perfluorononanoic acid (PFNA)	ND	0.020	ug/L	0.0065
Perfluorodecanoic acid (PFDA)	ND	0.020	ug/L	0.0026
Perfluoroundecanoic acid (PFUn A)	ND	0.020	ug/L	0.0025
Perfluorododecanoic acid (PFDo A)	ND	0.020	ug/L	0.0040
Perfluorotridecanoic acid (PFT riA)	ND	0.020	ug/L	0.0072
Perfluorotetradecanoic acid (P FTeA)	ND	0.020	ug/L	0.0087
Perfluorobutane sulfonate (PFB S)	ND	0.020	ug/L	0.0045
Perfluorodecane sulfonate (PFD S)	ND	0.020	ug/L	0.0029
Perfluorooctanesulfonate	ND	0.020	ug/L	0.0068
Perfluorooctanoic Acid	ND	0.020	ug/L	0.0055

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	102	(50	- 200)
13C4 PFOS	85	(50	- 200)
13C4 PFBA	71	(50	- 200)
13C2 PFHxA	72	(50	- 200)
18O2 PFHxS	85	(50	- 200)
13C5 PFNA	76	(50	- 200)
13C2 PFDA	82	(50	- 200)
13C2 PFUnA	90	(50	- 200)
13C2 PFDoA	68	(50	- 200)

Dalton Utilities

Client Sample ID: DUP

HPLC

Lot-Sample #....: D9H220152-008 Work Order #....: LJL3LLAC Matrix.....: WATER
Date Sampled....: 08/21/09 Date Received...: 08/22/09
Prep Date.....: 08/27/09 Analysis Date...: 08/29/09
Prep Batch #....: 9239343 Analysis Time...: 17:11
Dilution Factor: 1

Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057
SURROGATE	PERCENT	RECOVERY	LIMITS	
MeFOSA	RECOVERY 41 *	(50 - 200)		

NOTE (S) :

* Surrogate recovery is outside stated control limits.

Dalton Utilities

Client Sample ID: DUP

HPLC

Lot-Sample #....: D9H220152-008 Work Order #....: L JL3L2AC Matrix.....: WATER
Date Sampled....: 08/21/09 Date Received...: 08/22/09
Prep Date.....: 09/16/09 Analysis Date...: 09/18/09
Prep Batch #....: 9259162 Analysis Time...: 23:27
Dilution Factor: 1
Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctane sulfonamide (F OSA)	ND	0.050	ug/L	0.0057

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	(50 - 200)
MeFOSA	69		

QC DATA ASSOCIATION SUMMARY

D9H220152

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9240442	9240285
002	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	
003	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	
004	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	
005	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	
006	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9240442	9240285
	WATER	DEN -LC-0012		9259162	
007	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	
008	WATER	DEN -LC-0012		9238300	9238190
	WATER	DEN -LC-0012		9239343	
	WATER	DEN -LC-0012		9259162	